

## CLAIMS:

1. A magneto-resistive device comprising a substrate which carries a free and a pinned ferromagnetic layer for providing a magnetoresistive effect, said pinned layer comprising an artificial antiferromagnet layer system (AAF), and an exchange biasing layer, the exchange biasing layer being adjacent to and magnetically influencing the AAF layer system wherein the AAF layer system has an odd number of non-adjacent ferromagnetic layers greater than or equal to three.
2. Device as claimed in claim 1, in which the AAF layer system includes three CoFe layers and two intermediate non-magnetic layers.
3. Device as claimed in claim 1, in which the free and the pinned ferromagnetic layer are separated by a Cu-type layer, the Cu-type layer on both sides being contiguous with a Co or CoFe layer.
4. Device as claimed in claim 1 or 2, in which each of the intermediate layers of the AAF is a Ru layer.
5. Device as claimed in any of the claims 1 to 4, in which the exchange biasing layer is arranged between the substrate and the AAF layer system.
6. Device as claimed in any of the claims 1 to 5, wherein within the odd number of non-adjacent ferromagnetic layers form a stack of layers.
7. Device as claimed in claim 6, wherein at least two ferromagnetic layers towards the outside of the stack are thinner than a ferromagnetic layer towards the centre of the stack.

8. Device as claimed in claim 6, wherein at least two ferromagnetic layers towards the outside of the stack are thicker than a ferromagnetic layer towards the centre of the stack.

5 9. Data storage system including a magneto-resistive device according to any one of the preceding claims 1 to 8.

10. Magnetic memory including a magneto-resistive device according to any one of the preceding claims 1 to 8.

